1831 ELECTROMAGNETIC INDUCTION M Faraday (UK)

(see also SELF INDUCTION 1832)

In 1831 Faraday wound an iron ring with two coils: one, connected to a voltaic battery, was to create the primary vibration—the iron ring was to concentrate the lateral vibrations from this—and another coil on the opposite side of the ring was to convert these secondary vibrations into another electric current. Thus, on 29 August 1831, Faraday discovered electromagnetic induction.

SOURCE: *A Biographical Dictionary of Scientists* by T I Williams (London: Adam and Charles Black) (1969)p 174

1831 TRANSFORMER M Faraday (UK)

A contrivance was used by Michael Faraday in his experiments on electromagnetic induction. This device is described in his diary under the date of 29 August 1831:

'Expts. on the production of Electricity from Magnetism, etc. etc. Have had an iron ring made (soft iron) iron round and 7/8 inch thick and ring 6 inches in external diameter. Wound many coils of copper wire round one half, the coil is being separated by twine and calico there were three lengths of wire each about 24 feet long and they could be connected as one length or used as separate lengths. By trial with a trough each was insulated from the other. Will call this side of the ring A. On the other side but separated by an interval was wound wire in two pieces together amounting to about 60 feet in length, the direction being as with the former coils: this side call B.

Charges a battery of 10 pr. plates 4 inches square. Made the coil on B side one coil and connected its extremities by a copper wire passing to a distance and just over a magnetic needle (3 feet from iron ring). Then connected the ends of one of the pieces on A side with battery; immediately a sensible effort on needle. It oscillated and settled at last in original position. On breaking connection of A side with battery again a disturbance of the needle.

Made all the wires on A side one coil and sent current from battery through the whole. Effect on needle much stronger than before'. A multiwinding transformer and a transformer experiment are described by these words of Faraday's.

SOURCE: 'History, present status and future developments of electronic components' by P S Darnell *IRE Trans. on Component Parts* p 125 (September 1958)

SEE ALSO: *Faraday's Discovery of Electromagnetic Induction* by T Martine (London: Edward Arnold & Co) pp 52–4 (1949)

Note by British Science Museum:

'The word 'transformer' was first used in the electrical sense in 1883 for both static transformers and rotating machines (motor generators). Previous to this 'induction coil' had been used. Faraday was the first to link two electric circuits by a magnetic circuit. The earliest application of the device to transfer power appears to be Jablochkoff's patent No 1996 (date of application 22 May 1877). [1] This was really the first practical 'transformer' and it utilized a piece of apparatus which had existed since 1831.'

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[1] Jablochkoff's patent covered a lighting system which includes a mention of a transformer transferring power supply to a number of lamps